PENNSYLVANIA RAILROAD, MOUNT UNION BRIDGE
(Middle Division, Bridge No. 147)
Pennsylvania Historic Railroad Bridges Recording Project
Spanning Juniata River, north of Township Rt. 780 Bridge
Mount Union
Huntingdon County
Pennsylvania

HAER No. PA-529

PHOTOGRAPHS

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HISTORIC AMERICAN ENGINEERING RECORD
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Location:	Spanning Juniata River, north of Township Rt. 780 Bridge, between Mount Union, Huntingdon County, and Kistler, Mifflin County, Pennsylvania.
USGS Quadrangle:	Newton Hamilton, Pennsylvania (7.5-minute series).
UTM Coordinates:	18/256105/4474095
Date of Construction:	1906.
Basis for Dating:	Plaque on bridge.
Date of Alteration:	Unknown.
Designer:	Pennsylvania Railroad: Alexander C. Shand, Chief Engineer; F. B. Temple, Assistant Engineer.
Builder:	Eyre Shoemaker, Inc. (Philadelphia).
Present Owner:	Norfolk Southern Railroad.
Present Use:	Railroad bridge.
Structure Type:	Stone arch.
Significance:	The Mount Union Bridge is significant as an example of the Pennsylvania Railroad's prolific stone arch bridge construction during the early twentieth century. In addition, it elegantly breaks classical aesthetic rules by having an even number of spans.
Historian:	Justin M. Spivey, April 2000.
Project Information:	The Historic American Engineering Record (HAER) conducted the Pennsylvania Historic Railroad Bridges Recording Project during 1999 and 2000, under the direction of Eric N. DeLony, Chief. The project was supported by the Consolidated Rail Corporation (Conrail) and a grant from the Pennsylvania Historical and

Museum Commission (PHMC). Justin M. Spivey, HAER engineer, researched and wrote the final reports. Preston M. Thayer, historian, Fredericksburg, Virginia, conducted preliminary research under contract. Jet Lowe, HAER photographer, and Joseph E. B. Elliott, contract photographer, Sellersville, Pennsylvania, produced large-format photographs.

Description and History

In 1906, the Pennsylvania Railroad (PRR) eliminated a series of tight curves on its main line, between Ryde in Mifflin County and Mount Union in Huntingdon County, replacing them with a single, sweeping curve east of the Juniata River. Drake & Stratton Co. and P. McManus Co., two contractors, graded the new line.[1] The change also required new four-track bridges over the Juniata at both ends, designed and constructed to avoid interference with the existing tracks. In the tradition inaugurated by PRR Chief Engineer William H. Brown with his Stone Bridge at Johnstown in 1887, the existing metal truss bridges would both be replaced by stone arch structures.[2] Brown preferred stone for main-line structures because the material had greater durability and required less maintenance than steel.

Eyre Shoemaker, Inc., of Philadelphia, received the contract for constructing the bridges by a somewhat circuitous route. Drake & Stratton had originally bid $9.25 per cubic yard (cu. yd.) for the Ryde Bridge, and $8.50 per cu. yd. for Mount Union, and evidently received a contract on 10 January 1906 at those prices. The following day, Brown canceled the contract, although the reasons are unclear. Perhaps Drake & Stratton had overcommitted its resources, and backed out of the bridge contract in order to focus on the grading work. Or Brown might have negotiated with Eyre Shoemaker, another contractor, for lower prices. In PRR records, Eyre Shoemaker's original bids of $9.45 per cu. yd. for the Ryde Bridge, and $8.95 per cu. yd. for Mount Union were crossed out, and replaced with $8.85 and $8.45, respectively. Brown awarded the contract to Eyre Shoemaker on 13 January 1906.[3]

Despite his role in its construction, Brown's name does not appear on the stone plaque identifying the bridge. Brown retired in March 1906, at which time Assistant Chief Engineer Alexander C. Shand took over, receiving credit on the plaque as Chief Engineer. Shand also signed drawings for the bridge, which make it appear that, at least under Brown's supervision, he followed in the PRR's stone arch bridge tradition. A decade or so later, it became evident that Shand preferred reinforced concrete, which soon replaced stone as the material of choice for "permanent" (i.e., durable and low-maintenance) main-line structures. The Mount Union Bridge is therefore among the last of the Brown era, and also among the few constructed under Shand's supervision.

The Mount Union Bridge has six segmental stone arch spans, each 100'-0" long and 58'-0" wide. A bridge with an even number of spans would ordinarily violate classical aesthetic rules by having no easily identified center. To avoid this mistake, however, the center pier's width was increased 20'-0", making it 8'-0" wider than its neighbors. This subtle difference draws the eye to the middle pier and balances the composition. All piers are founded on rock,

which forms the shallow river bed. Behind the stone arch rings, unreinforced concrete backing tapers from 25'-0" deep at each pier, to less than 1'-0" thick at the crown. Stepped wing walls, extending 60'-0" from each corner, also have a concrete backing.[4] Added in a subsequent alteration to strengthen the bridge, modern concrete piers and parapet beams form an "exoskeleton" that reinforces the bridge's spandrel walls.

Notes

1. Charles Howard Welch, *History of Mount Union, Shirleysburg and Shirley Township* (Mount Union, Pa.: Mount Union Times, 1910), cited in Elizabeth S. Goodman, historian/archivist, Mount Union Area Historical Society, letter to author, 19 Jan. 2000. The Mount Union Historical Society has a construction photograph in its collections, Acc. N-271-C-1987.

2. The previous Mount Union Bridge was a metal truss constructed by the Pencoyd Iron Works in 1893; see F. L. Sheppard, General Superintendent, to William H. Brown, Chief Engineer, 8 Mar. 1893, in file: Bridges - Middle Division 1890-1906, Box 1453, Chief Engineer, Engineering Department, Pennsylvania Railroad Company Records, Acc. 1807, Hagley Museum and Library, Greenville, Del. [hereinafter cited as PRR Correspondence]. The first bridge at Mount Union was a four-span wooden covered structure built in 1850; see Fred J. Moll, "Covered Railroad Bridges of Pennsylvania," 5, typescript in file: Bridges - Misc., Box 13, Research Files, Railroad Museum of Pennsylvania, Pennsylvania Historical and Museum Commission, Strasburg, Pa.

3. William H. Brown, to Drake & Stratton Co., 10 Jan. 1906; and Brown, to Eyre Construction Co., 13 Jan. 1906; both in PRR Correspondence.

4. Dimensions from Pennsylvania Railroad, "Mt. Union Stone Arch Bridge over Juniata River, Ryde to Mt. Union — Change of Line, Middle Division, P. R. R.," dated 8 Feb. 1906, milepost 189.77, region/division/branch 212102, Consolidated Rail Corp., Philadelphia, Pa.

Acknowledgments

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Additional Source

1. "Pennsylvania Railroad: Bridge between Mount Union and Kistler," in Nancy S. Shedd, *Huntington County, Pennsylvania: An Inventory of Historic Engineering and Industrial Sites,* America's Industrial Heritage Project series (Washington, D.C.: U.S. Department of the Interior, National Park Service, 1991), 70-71.